

What is claimed is:

1. A data relay server for accessing a database server via a communication network in accordance with a query for a database received from a client computer, comprising:

first means for encrypting retrieval condition data included in the query received from the client computer;

second means for producing a query message destined for said database server, including the retrieval condition encrypted by said first means;

third means for transmitting the query message produced by said second means to said communication network;

fourth means for receiving via said communication network, as a retrieval result, data matched with said encrypted retrieval condition retrieved by matching the encrypted data from said database server; and

fifth means for producing a response message for the client computer on the basis of the retrieval result received by said fourth means and transferring the response message to the requester client.

2. The data relay server according to claim 1, wherein the query received from said client

computer designates at least one data item to be replied as a retrieval result, and

the query message produced by said second means includes, as data items to be replied as a retrieval
5 result, not only the data item designated by the query from said client computer but also a data item corresponding to said encrypted retrieval condition.

3. The data relay server according to claim 1, wherein
10 the query message produced by said second means includes identification information of an encryption program for encrypting said retrieval condition.

4. The data relay server according to claim 1, wherein
15 the query message produced by said second means includes an encryption program for encrypting said retrieval condition.

5. The data relay server according to claim 2, wherein
20 said fifth means has means for re-searching the retrieval result received by said fourth means with the retrieval condition included in the query received from said client computer, and said response message for said client computer indicates a result of said
25 re-search.

6. The data relay server according to claim 1, further comprising

sixth means for converting at least two queries
5 received from different client computers into a linked query and supplying the linked query to said first means, and

said fifth means re-searches the retrieval
results for said linked query received from said
10 database server for data matched with the retrieval condition indicated by the original query issued by each of said client computers and produces a response message to each client computer.

15 7. The data relay server according to claim 2, further comprising

sixth means for converting at least two queries
received from different client computers into a linked
query and supplying the linked query to said first means,
20 and

said fifth means re-searches the retrieval
results for said linked query received from said
database server for data matched with the retrieval
condition indicated by the original query issued by
25 each of said client computers and produces a response

message to each client computer.

8. The data relay server according to claim 1, further comprising

5 sixth means for converting one query received from a client computer into at least two distributive queries and supplying the distributive queries to said first means,

10 wherein said second means converts one of the distributive queries including the retrieval condition encrypted by said first means into a query message for said database server, and converts the other distributive query to a query message for a pre-designated another data relay server, and

15 said fifth means re-searches a retrieval result for the one of distributive queries received from said database server and a retrieval result for the other distributive query received from said another data relay server for data matched with the retrieval
20 condition indicated by the original query issued by said client computer, and produces a response message for the client computer.

9. The data relay server according to claim 2, further
25 comprising

sixth means for converting one query received from a client computer into at least two distributive queries and supplying the distributive queries to said first means,

- 5 wherein said second means converts one of the distributive queries including the retrieval condition encrypted by said first means into a query message for said database server, and converts the other distributive query to a query message for a pre-designated another data relay server, and

- 10 said fifth means re-searches a retrieval result for the one of distributive queries received from said database server and a retrieval result for the other distributive query received from said another data relay server for data matched with the retrieval condition indicated by the original query issued by
- 15 said client computer, and produces a response message for the client computer.

- 20 10. A database server for executing information retrieval in response to a query message received from a communication network, comprising:

a database in which service information is stored;
and

- 25 a database management system for searching said

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database for service information matched with a retrieval condition designated by said query message, and

said database management system comprising:

5 means for encrypting a specific data item designated by said retrieval condition read out from said database when said query message includes encrypted retrieval condition data, and retrieving service information matched with said retrieval
10 condition by encrypted data matching; and

means for transmitting a response message including the retrieved service information to the source of said query message.

15 11. The database server according to claim 10, wherein said query message includes identification information of an encryption program and

said retrieving means encrypts a specific data item read out from said database by an encryption
20 program designated by said identification information.

12. A database access method comprising the steps of:
encrypting at least a part of a retrieval condition
25 designated by a client;

encrypting, in said server, a specific data item, which is designated by said retrieval condition and read out from said database, and retrieving service information matched with said retrieval condition by encrypted data matching; and

13. The database access method according to claim 12, further comprising a step of re-searching, by the source of said query message, the retrieval result received from said server in accordance with the retrieval condition designated by said client.

wherein the retrieval result received by the server includes a data item corresponding to said encrypted retrieval condition.